Accepted by the faculty of the School of Education, Morehead State University, in partial fulfillment of the requirements for the Education Specialist degree.

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TWO READING TESTS' ABILITY TO PREDICT ACADEMIC SUCCESS

Oda Van Winkle, ED. S.
Morehead State University, 1979

Director of Thesis: Paul Fred Davis

The purpose of this study was to determine which reading test, Nelson-Denny Reading Test or Reading Progress Scale Test, most accurately predicted grade point averages earned by Lees Junior College freshmen at the end of the first semester, 1976. Additionally, the study was to determine the Reading Progress Scale Test's ability to predict grade point averages for freshmen at the end of the first semester, 1977. The review of literature revealed somewhat different findings regarding the two reading tests' ability to predict academic success.

The population of the study consisted of seventy-four freshmen in 1976 and eighty freshmen in 1977 at Lees Junior College in Jackson, Kentucky. Each year entering freshmen were tested in September.

The raw data from the study were subjected to the Pearson-product moment correlation for statistical analysis. The Table of Critical Values of Pearson Product Moment Correlation examined the significance of the correlations. It was found that there were significant correlations between

the Nelson-Denny Reading Test and grade point averages in 1976 and the Reading Progress Scale Test and grade point averages in 1976 and 1977 at or above the .05 level of confidence.

The Test of Significance of the Difference Between Two Correlated Coefficients for Correlated Samples was used to determine if there was a significant difference between the Nelson-Denny Reading Test and Reading Progress Scale Test's correlation with grade point averages in 1976. The T test findings indicated that there was no significant difference between the ability of the two reading tests to predict grade point averages.

In view of the findings of this study, several recommendations were made for future study including a longitudinal comparative correlation study of the Nelson-Denny Reading Test and the Reading Progress Scale Test's ability to predict academic success. An examination of other characteristics of the two tests such as ease of administration and scoring and student reaction to the testing environment was also recommended.

Accepted by:

Paul Ford Davis Chairman

R W Daniel

Wm C Hampton

TWO READING TESTS' ABILITY TO PREDICT ACADEMIC SUCCESS

A Thesis

Presented To

the Faculty of the Education School

Morehead State University

In Partial Fulfillment

of the Requirements for the Degree

Education Specialist in Higher Education

by

Oda Van Winkle

December, 1978

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BIOGRAPHY

Oda (Followwill) Van Winkle graduated from St. Charles, Iowa High School in 1960. She received the Bachelor of Science in Education degree in English in 1966 and the Master of Science degree in English in 1970 from Northern Illinois University in DeKalb, Illinois. She will receive the Education Specialist in Higher Education degree in May, 1979 from Morehead State University, Morehead, Kentucky.

Mrs. Van Winkle is a member of International Reading Association and the Special Interest Group for Two Year College Reading Teachers in the International Reading Association. Her publications include articles in Forum for Reading and Innovative Learning Alternatives in the Community College. She presented a paper, "A Report on Research--A Comparative Correlation Study of Two Reading Tests" at the International Reading Association Convention, Special Interest Group for Two Year Colleges in Houston, Texas, May 2, 1978.

Mrs. Van Winkle's experience includes teaching English at Haines Junior High School in St. Charles, Illinois and teaching reading in the Title I program at Blackhawk Junior High School in Park Forest, Illinois. Since 1974, she has been teaching developmental reading at Lees Junior College in Jackson, Kentucky.

At Lees, Mrs. Van Winkle developed the first reading screening program for entering freshmen. It became apparent that there was a need to examine the two tests used in the screening program to determine their ability to predict academic success at the college. The results of that research appear in the following thesis.

TABLE OF CONTENTS

LIST OF TABLES

Chapter 1

INTRODUCTION

Lees College is a private junior college in Jackson, Kentucky which offers two year co-educational liberal arts and career preparation curricula. The junior college is primarily dedicated to serving people from eastern Kentucky and the Appalachian region.

Among the institutional goals Lees College has developed is this one: "To insure that students acquire a basic knowledge in the humanities, social sciences, and natural sciences."[1] The reading program at Lees College is particularly concerned with this goal of insuring acquisition of a basic knowledge in the humanities, social sciences, and natural sciences. To acquire knowledge, reading is essential.

The task which follows the assertion that reading is essential is the one of finding out at what level the entering Lees College freshmen read. Thus, a reading screening program has been developed at Lees as part of freshmen orientation. The students' test results are given to advisors who counsel students regarding enrolling in

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[1] Lees Junior College Bulletin, 1976, p. 6.

the remedial reading course, English 100.

The remedial reading course offers individualized instruction designed to overcome weaknesses in vocabulary and comprehension skills. A student may enroll for one semester of two hours credit and an additional semester of two more hours credit if the instructor in reading and student determine the need to do so.

Statement of the Problem

Quickly and accurately screening the reading skills of incoming freshmen on registration day has created a problem for the reading instructor in the past because the reading test in use, Nelson-Denny Reading Test, was time consuming to administer and score. If the results accurately indicated which students needed remedial reading instruction, the Nelson-Denny Reading Test would be the appropriate test to administer. If not, another reading test would be a better choice as a screening test.

Purpose of the Study

The purpose of this study is to determine which reading test, Nelson-Denny Reading Test or Reading Progress Scale Test, most accurately predicts grade point averages earned by freshmen at Lees Junior College at the end of the first semester, 1976. Additionally, the study

will determine the Reading Progress Scale Test's ability to predict grade point averages for the freshmen at the end of the first semester, 1977.

Need for the Study

The results of the study will be used to determine which reading test, Nelson-Denny Reading Test or Reading Progress Scale Test, will be used in the freshmen reading screening program at Lees Junior College in Jackson, Kentucky.

Limitations of the Study

The limitations of this study are:

1. The population for this study is limited to full time entering college freshmen, male and female, during the Fall Semester 1976 and the Fall Semester 1977 at Lees Junior College in Jackson, Kentucky.

2. The population for this study is limited to those freshmen who remained at Lees Junior College through the semester to earn a grade point average at the end of the semester.

Hypotheses

The following hypotheses will be tested:

1. There will be no significant correlation between the Nelson-Denny Reading Test and grade point averages earned at the end of the first semester, 1976.

2. There will be no significant correlation between the Reading Progress Scale Test and grade point averages earned at the end of the first semester, 1976.

3. There will be no significant correlation between the Reading Progress Scale Test and grade point averages earned at the end of the first semester, 1977.

4. There will be no significant difference between the Nelson-Denny Reading Test's correlation with grade point averages earned at the end of the first semester, 1976, and the Reading Progress Scale Test's correlation with grade point averages earned at the end of the first semester, 1976.

Definition of Terms

1. College freshmen: First year college students with zero to twenty-nine hours.

2. Freshmen orientation: Sessions for students to aid them in successful adjustment to college and campus life.

3. Grade point averages: At Lees Junior College, all grade point averages are based on a four point system with "A" equal to four points, "B" equal to three points, "C" equal to two points, and "D" equal to one point.

Chapter 2

REVIEW OF LITERATURE

The central role reading ability plays in academic success on the college level has often been studied. Typical of the research on the relationship between reading ability and academic performance was the study done in Florida in 1974.

The population in this research consisted of students from four junior colleges in Florida. From a total population of 7859 students, 898 subjects were chosen. All were freshmen, homogeneous with reference to chronological age and number of years in school. This hypothesis was tested: "There is no significant relationship between reading ability as measured by the reading index score on the Florida Twelfth Grade Test, and academic performance, as measured by the cumulative grade point average of college freshmen at four selected junior colleges."[1]

Analysis of the data revealed that the reading index score on the Florida Twelfth Grade Test was found to be a significant predictor of the cumulative grade point average in the freshmen year of college. The findings of this research indicated a positive and significant correlation

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[1]Richard C. Wilson and Polly Godwin Einbecker, "Does Reading Ability Predict College Performance?" Journal of Reading, 18 (December, 1974), 234-237.

between reading ability and academic performance.

It is not surprising that in recognition of the relationship between reading and academic performance that many universities and junior colleges have developed reading programs with the expectation that student participation in such a program would result in greater academic success. Fairbanks examined eighty-seven college level reading and study skills programs which were reported from 1930 through 1974. Using grade point average gains as her criteria for evaluating the program's effect on academic achievement, she identified thirty-four programs which showed student gains at the .05 level of significance or above and twenty programs which showed student gains at less than the .05 level of significance.[2]

There seems, then, to be established in the research evidence regarding the relationship between reading and academic performance and the value of reading programs in improving students' prospects for academic success. What does not seem to be established is admissions criteria for student participation in reading programs.

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[2]Marilyn Fairbanks, "The Effects of College Reading Improvement Programs on Academic Achievement," Interaction: Research and Practice in College-Adult Reading, ed. P. L. Nacke (Clemson, South Carolina: Twenty-Third Yearbook of The National Reading Conference, 1974), pp. 105-114.

To obtain an assessment of the reading proficiency of students, standardized tests are often used. Tests which were cited as those most often selected for purposes of admissions criteria were Nelson-Denny Reading Test, Iowa Silent Reading Test, California Reading Test, and Cooperative Reading Test.[3] Nelson-Denny is reviewed in the Sixth Mental Measurement Yearbook as useful for "teachers of college-bound grades 11 and 12...; it may also be useful for college placement."[4]

Nelson-Denny Reading Test is often used as a placement test. Students scoring below a certain percentile as established by national or local norms are enrolled in the college or university's reading program.

Researchers have examined the use of the Nelson-Denny Reading Test as a placement test in various studies asking about the relationship between the Nelson-Denny Reading Test and grade point averages.

In Virginia, a study was conducted to examine the predictive validity of the Nelson-Denny Reading Test in the Virginia Community College System. Subjects were stu-

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[3]Howard M. Evans, and Eugene E. DuBois, "Community Junior College Remedial Programs--Reflections," Journal of Reading, 16 (October 1972), 42.

[4]Oscar Buros, ed., The Mental Measurement Yearbooks (6th ed.; Highland Park, New Jersey: The Gryphon Press, 1968), p. 800.

dents at Blue Ridge Community College enrolled in English and Psychology courses in 1975. The Nelson-Denny Reading Test was administered to students during orientation. At the conclusion of the academic quarter, means and standards deviations of the Nelson-Denny Reading Test and final grades were computed as were product-moment correlations between Nelson-Denny Reading Test scores and grades. The results indicated that Nelson-Denny Reading Test scores predicted course grades to the extent that course content was gleaned by reading.[5]

Another study was done in the Hawaii Community Colleges in the Fall of 1975. The purpose of this study was to explore the relationship of student scores on the Nelson-Denny Reading Test to academic performances as reflected by grade point averages. Nelson-Denny Reading Test scores for 1,981 students provided the data. Correlation coefficients between grade point averages and vocabulary scores and between grade point averages and comprehension scores were .224 and .111,

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[5]Bernard H. Levin and others, The Nelson-Denny Reading Test as a Predictor of Community College English and Psychology Grades, United States Educational Resources Information Center, ERIC Document ED 129 358, 1976.

respectively.[6]

The correlations found in the Hawaii study were low compared to those described in the Examiner's Manual of the Nelson-Denny Reading Test. There, unpublished data from the University of Minnesota indicated that Nelson-Denny Reading Test total scores correlated .397 with grade point averages.[7]

In research conducted by this researcher in the Fall of 1975 at Lees Junior College in Jackson, Kentucky, the Nelson-Denny Reading Test, Forms A and B, were used. The test was administered to 114 entering freshmen. At the end of the semester, the grade point averages earned by the students were gathered. An expectancy table was constructed using the Nelson-Denny Reading Test scores as the predictor measure and grade point averages earned as the assessment measure. The results indicated that the Nelson-Denny Reading Test predicted high grade point averages--those above a 2.9 on a four point basis for students

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[6]Office of Education, Washington, D.C., Analysis of Nelson-Denny Reading Test Scores, Leeward Community College, Hawaii, 1975, Student Flow Project, Report No. 13. United States Educational Resources Information Center, ERIC Document ED 130 692, October, 1976.

[7]James I. Brown and others, Examiner's Manual The Nelson-Denny Reading Test (Boston: Houghton Mifflin, 1973) p. 15.

who scored high on the test--above the 65th percentile. For students who scored in the 46th to 64th percentile, the test again predicted high grade point averages. The test failed to predict grade point averages for the student who scored below the 45th percentile. Specifically, low Nelson-Denny Reading Test scores predicted about equal chances of low, average, or high grade point averages.[8]

It was concluded by this researcher that since 87 of the 114 students (seventy-three percent) scored below the 25th percentile, and since the Nelson-Denny Reading Test did not predict grade point averages in this range, that further examination of the test would be in order to determine if the Nelson-Denny Reading Test would be an appropriate test to use at Lees Junior College.

A study was done in Sarasota, Florida, in 1976 by this researcher to examine the content and construct validity of the Nelson-Denny Reading Test. The conclusions reached included: The content validity of the Nelson-Denny Reading Test was questionable for use at Lees Junior College because the test items were selections almost

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[8]Oda Van Winkle, "Reading Test Scores and Academic Success in Junior College," Innovative Learning Alternatives in the Community College 1976, ed. F. Curran (Middletown, Ohio: Special Interest Group for Two Year Colleges of The International Reading Association, 1976), Article 8.

exclusively from literature rather than selections from a broad spectrum of areas such as science and history. There were also problems with the construct validity for testing purposes at Lees Junior College. The restrictive time allowances for the rate, vocabulary, and comprehension subtests were seen as negative factors in obtaining a valid measure of the student's reading proficiency.[9]

Other researchers have criticized the ability of traditional reading tests to measure reading ability:

> ...recent psycholinguistic studies of reading and learning to read have raised some serious doubts about conventional reading tests such as the Davis, the Stanford, and the Nelson-Denny. Whatever those tests measure may not be very good measures of reading ability. It may very well be that reading is not as readily quantifiable in any meaningful way as we have up to this time thought it was. Reading, like writing is a process, an activity, and there is no widely meaningful way to quantify writing.[10]

Because of questions regarding the test's ability to measure reading ability and the finding in the 1975 research at Lees College that the Nelson-Denny Reading Test was unable to predict accurately the academic performance of most students, an alternative screening test was sought.

The experience of one community college in

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[9]Oda Van Winkle, "Evaluation of Nelson-Denny Reading Test," (unpublished research, Spache Reading Institute, Sarasota, Florida, 1976), 6.

[10]Thomas S. Farrell, "Reading in the Community College," College English, 27 (September, 1975), 43-44.

Lansing, Michigan seemed to suggest a reading test appropriate for screening purposes. In a report from there, Allan R. Maar chronicled the college's streamlining, redesign, and final choice of Ronald Carver's Reading Progress Scale Test to screen incoming freshmen.

The Reading Progress Scale Test measures reading input performance using the cloze procedure which was defined as follows:

> The term "cloze" derives from the Gestalt term "clozure." It is used to describe the tendency for a person mentally to complete or make whole an incomplete pattern and to see complete patterns as figures more readily than incomplete ones.... The cloze procedure measures the ability of a reader to use a variety of contextual interrelationships in completing any particular blank. It deals not only with specific word meanings but also the ability of the reader to respond to a cloze test. It will reflect the total language abilities of the reader.[11]

While expressing the opinion that the use of the Reading Progress Scale Test gave the college "a far better idea than ever before of the dimensions of its first term students' reading problems..," Maar recognized the need for a study to determine whether correlations exist between the Reading Progress Scale Test scores and grade

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[11]John Gilliland, Readability (University of London Press Ltd., 1972), 102-103.

point averages.[12]

In recent (January 1978) correspondence with this researcher, Maar shared unpublished research Lansing Community College had done in 1977 to determine the effectiveness of the Reading Progress Scale Test in predicting academic success. The data analysis consisted of using a contingency table to indicate the degree of association between the two variables (Reading Progress Scale Test and grade). The ChiSquare test was used as a test of significance. The conclusion reached in the research was "in general it appears that the Reading Progress Scale scores and course grades are not consistently related and the Reading Progress Scale is probably not a good predictor of the course grades."[13]

Other than Lansing Community College's unpublished data analysis, there is a paucity of research done on the Reading Progress Scale Test or any other cloze test for predictive purposes. Many earlier studies conducted by

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[12]Allan R. Maar, "Introducing a New Screening Instrument; Streamlined Redesign for the Reading Progress Scale," Innovative Learning Alternatives in the Community College 1976, ed. F. Curran (Middletown, Ohio: Special Interest Group for Two Year Colleges of the International Reading Association, 1976), Article 10.

[13]Allan R. Maar, "Relationship Between the Scores Students Received on the Reading Progress Scale and the Grades Earned In Courses," (unpublished paper, Lansing Community College, Lansing, Michigan, 1977).

W. L. Taylor,[14] Earl Rankin and Joseph W. Culhane,[15] and J. Schneyer[16] present information on the use of the cloze procedure on the elementary grade level as a measure of readability, comprehension, and language facility. On the college level, the focus has been upon the effect of using the cloze procedure as an instructional technique to improve reading achievement.[17]

A review of research literature, then, reveals somewhat different findings regarding the two reading tests ability to predict academic success. The Minnesota and Virginia studies found the Nelson-Denny Reading Test more capable of predicting grades than did the Hawaii and Kentucky studies. Research about the Reading Progress Scale Test is infinitesimal with only one unpublished data analysis available from Michigan which did not find

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[14]W. L. Taylor, "Cloze Procedure: A New Tool for Measuring Readability," Journalism Quarterly, 30 (1953) 415-33.

[15]Earl F. Rankin and Joseph W. Culhane, "Comparable Cloze and Multiple Choice Comprehension Test Scores," Journal of Reading, 13 (December, 1969), 193-198.

[16]J. Wesley Schneyer, "Use of the Cloze Procedure for Improving Reading Comprehension," The Reading Teacher, 19 (December, 1965), 174-179.

[17]Nathan Pessah, The Effect of Various Teaching Techniques, Involving the Cloze Procedure, Upon the Reading Achievement of Community College Students, United States Educational Resources Information Center, ERIC Document ED 110 945, May, 1975.

the test to be a good predictor of grades. Additionally, a comparative correlation study of Nelson-Denny Reading Test and Reading Progress Scale Test seems yet to be done.

It is very appropriate, therefore, to undertake research to determine which test, Nelson-Denny Reading Test or Reading Progress Scale Test, most accurately predicts grade point averages at Lees Junior College in Jackson, Kentucky.

Chapter 3

METHODOLOGY

Samples Studied

In September, 1976, seventy-four freshmen students at Lees Junior College were given the Nelson-Denny Reading Test and the Reading Progress Scale Test. In addition, the Reading Progress Scale Test was administered to eighty freshmen in September, 1977.

In 1976, the age range of the freshmen students was seventeen through twenty-six years. The median age was eighteen years. There were thirty-four males and forty females. In 1977, the age range for entering freshmen was seventeen through thirty-four years. The median age was eighteen years. There were thirty-six males and forty-four females. (See Appendix A 1976 and Appendix B 1977.)

For both years the socio-economic background was similar for the freshmen. Most students who came to Lees Junior College were from the surrounding rural region where the per capita personal income is forty-four percent of the national average.[1] The low income level was

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[1]Kentucky Education Association Research Bulletin, How Kentucky Ranks (Louisville: Public Relations and Research Division, 1977), p. 9.

further indicated in the percentage of students who received either federal or state loans or grants to defray college expenses. Eighty percent of the Lees freshmen in 1976 and eighty-four percent in 1977 received financial aid.[2]

The educational background of the students in 1976 and 1977 was also similar. The freshmen entering Lees Junior College in those years received their education in Eastern Kentucky high schools which are the poorest in Kentucky and Kentucky as a whole is ranked forty-ninth in the United States.[3] In 1976 and 1977, Lees Junior College freshmen often were not only the first in their families to attend college, but also the first to graduate from high school.[4]

Basic Assumptions

It is assumed in this study that the data obtained from the Reading Specialist were accurate.

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[2]"Lees Junior College Student Demographic Report," (unpublished report on file, Lees Institutional Research Office, Jackson, Kentucky, 1976-1977.)

[3]Kentucky Department of Education, Profiles of Kentucky Public Schools (Frankfort, Kentucky: Commonwealth of Kentucky, 1977), p. 15.

[4]"Lees Junior College Student Demographic Report," op. cit.

It is assumed that the grade point averages received from the Registrar's office were accurate.

Data Collecting Instruments

The instruments used in this study were the Nelson-Denny Reading Test, Forms A and B, and the Reading Progress Scale Test, Forms 2C and 5C. The Lees Junior College Grade Point Average Report was also used for the Fall Semester 1976 and the Fall Semester 1977.

The Nelson-Denny Reading Test is designed for use in grades nine through sixteen. Three subtest scores are available to measure rate, vocabulary, and comprehension. The vocabulary test consists of one hundred multiple choice items and is a timed ten minute test. The comprehension test consists of thirty-six multiple choice items based on a series of reading selections. It is also a timed test of twenty minutes. The rate test is based on the number of words in the first comprehension selection which the student reads during the first minute of the comprehension test. The rate score was not used in this research.

The total test raw score is arrived at by allowing two points for each comprehension question that is answered correctly. The total raw score can then be converted to a percentile score.

The Examiner's Manual explains the percentile score as figure which places each student somewhere between one and ninety-nine so that he may know where he stands in the norm group. The fiftieth percentile marks the middle point, the division between upper and lower halves.[5] An average thirteenth grade freshman would be expected to score in the fiftieth percentile as indicated in the Table of Percentile Rank of Scores for Grade Thirteen.[6]

In the testing situation for this research, both Forms A and B of the Nelson-Denny Reading Test were used. Instructions from the Examiner's Manual were read verbatim. Scores were recorded in raw scores and converted to percentile rank scores as indicated in the Table of Percentile Rank of Scores for Grade Thirteen. (See Appendix A 1976.)

Standardization, validity, and reliability information was gathered for both tests used in this research. The Examiner's Manual for the Nelson-Denny Reading Test stated that the norming population of 8,034 for the college

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[5]James I. Brown, Examiner's Manual The Nelson-Denny Reading Test (Boston: Houghton Mifflin Company, 1960), p. 10.

[6]Ibid., p. 15

level was randomly selected from five different kinds of institutions of higher education.[7]

Content validity for the Nelson-Denny Reading Test was found to be high for literary materials but low for science materials.[8]

The construct validity for the Nelson-Denny Reading Test was found to be somewhat weakened by its emphasis upon time restrictions which may cause the test to measure speed of reading rather than measuring reading ability itself.[9]

Reliability coefficients for the Nelson-Denny Reading Test were determined using the equivalent forms reliability method. Reliability for reading rate, vocabulary, and total scores was .92.[10]

The Reading Progress Scale Test, Forms 5 and 2, is designed for use in grades one through twelve. The

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[7]Ibid., p. 29

[8]Oscar Buros, ed., The Sixth Mental Measurement Yearbook (Highland Park, New Jersey: The Gryphon Press, 1968), pp. 800-801.

[9]Roger Farr, "Nelson-Denny Reading Test," Reading Tests for the Secondary Grades, ed. W. Blanton and others (Newark, Delaware: International Reading Association, 1972), p. 33.

[10]Brown, op. cit., p. 26.

college version of the test, Forms 5C and 2C, is designed for use on the college level. The college version is the same as the lower level version with the exception of some corrections in punctuation and spelling.[11]

Rather than subtests to measure particular reading skills such as vocabulary and comprehension, the Reading Progress Scale Test consists of paragraphs designed to measure reading input and decoding ability. The test contains four paragraphs graded for level of difficulty. Each paragraph is approximately one hundred words in length.

Instead of a multiple choice format, the Reading Progress Scale Test uses a variant of the cloze procedure. Rather than deleting every fifth word, an additional wrong word is added to every fifth word. The student's task is to choose which word of the pair belongs in the sentence. Within each graded paragraph, a student responds twenty times by marking an "X" in a blank ballot square which precedes a two word option. Testing time is seven minutes for the total test.

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[11]Allan R. Maar, "Introducing--A New Screening Instrument Streamlined Redesign for the Reading Progress Scale," Innovative Learning Alternatives in the Community College 1976 (Middletown, Ohio: Special Interest Group for Two Year Colleges, International Reading Association, 1976), Article 10, pp. 5-9.

The Reading Progress Scale Test is scored for each paragraph. The student receives a pass (P) or fail (F) rating for each of the four paragraphs. If the student gets eighteen, nineteen, or twenty correct (i.e., ninety percent or greater) on any paragraph, then he receives a pass (P) rating for the paragraph. If he gets seventeen or less correct on a paragraph, then he receives a fail (F) rating for the paragraph. A student's total raw score is the number of paragraphs from zero to four that he passed.

For each level paragraph passed, a grade-level score is also provided. A score of zero paragraphs passed indicates that the individual can not read materials used in the first to third grade curriculum. A score of one indicates the individual can read materials used in the first to third grade curriculum.

A score of two indicates an ability to read materials used in grades four through six. A score of three indicates an ability to read material corresponding to that used in grades seven through nine. A score of four indicates an individual can read materials on adult level or materials corresponding to tenth to

twelfth grade in high school.[12]

In the testing situation for this research, both Form 5C and Form 2C were used. Instructions from the Manual Supplement for the Reading Progress Scale Test were read verbatim. Scores were recorded indicating which level, zero through four, the student passed on the test. (See Appendix A 1976 and Appendix B 1977.)

The Manual for the Reading Progress Scale Test states that the test is not a norm-referenced test but a criterion-referenced test.[13] The test is an absolute type of measurement. Interpretation is based on the level of difficulty of the material read, not the average score for a normed population.

However, some norms were presented in the Manual for the Reading Progress Scale Test. The norms were based on the administration of the test to 471 students in grades three through twelve when the test was being developed. The median score for grade twelve was Level Four where ninety-three percent of the students scored.[14]

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[12]Ronald Carver, Manual for the Reading Progress Scale (Silver Spring, Maryland: Revrac Publications, 1971), p. 1.

[13]Ibid., p. 2.

[14]Ibid., p. 8.

When the college version of the Reading Progress Scale Test was administered to 1759 students, sixty-seven percent of the students scored at Level Four.[15]

Content validity of the Reading Progress Scale Test was found by this researcher to be high for civics and geography but low for literary and science materials.

Construct validity of the test was reported in a study that found that scores were affected by time limits eight percent on Form 5 and six percent on Form 2. Those students who failed a paragraph at one level and then passed a higher level were four percent of the students on Form 5 and five percent on Form 2.[16]

The alternate-form reliability estimate found the correlation between Form 5 and Form 2 to be .84.[17]

Procedures

The Nelson-Denny Reading Test and the Reading Progress Scale Test were both administered by this researcher in September, 1976. Also, the Reading Progress

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[15]Ronald Carver, Manual Supplement for College Version of Reading Progress Scale (Kansas City, Mo.: Revrac Publications, 1976), p. 2.

[16]Carver, op.cit., p. 7

[17]Ibid.

Scale Test was administered by this researcher in September, 1977. The test scores were recorded for each student. The grade point average for each student was obtained from the Registrar's Office in January 1977 and in January 1978. The grade point averages were then recorded for each student. (See Appendix A 1976 and Appendix B 1977.) Measures of dispersion and central tendency were then determined.

Statistical Techniques

The Pearson-product moment correlation[18] was the statistical technique used to determine the relationship between the Nelson-Denny Reading Test scores and grade point averages. It was also used to determine the relationship between Reading Progress Scale Test and grade point averages both at the end of the first semester 1976 and at the end of the first semester 1977.

The Table of Critical Values of Pearson Product Moment Correlation Coefficient was used to determine if the relationship between the Nelson-Denny Reading Test scores and grade point averages was significant. The Table of Critical Values was also used to determine if

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[18] J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill, 1956), p. 95.

the relationship between the Reading Progress Scale Test scores and grade point averages was significant both in 1976 and 1977.[19]

Another statistical technique used in this research was the Test of Significance of the Difference Between Two Correlation Coefficients for Correlated Samples.[20]

The formula $t = \frac{(r_{12} - r_{13}) \sqrt{(N-3)(1+r_{23})}}{\sqrt{2(1-r_{12}^2-r_{13}^2-r_{23}^2+2r_{12}r_{13}r_{23})}}$ was used.

t = Test of significance

r^{12} = Correlation between Nelson-Denny and grade point averages

r^{13} = Correlation between Reading Progress Scale and grade point averages

r^{23} = Correlation between Nelson-Denny and Reading Progress Scale

N = Number of observations in sample

N-3 = Degrees of freedom (df)

For df=70, a t of about 1.667 is required for a significance at the .05 level of confidence.[21]

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[19]Bruce W. Tuckman, Conducting Educational Research (New York: Harcourt Brace Jovanovich, Inc., 1972), p. 371.

[20]George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, 1977), p. 171.

[21]Allen L. Edwards, Statistical Analysis (New York: Holt Rinehart and Winston, 1974), p. 258.

After the data had been statistically analyzed through the above procedures, conclusions and recommendations were made from the results.

Chapter 4

ANALYSIS OF THE DATA

Introduction

The data were gathered by administering the Nelson-Denny Reading Test and the Reading Progress Scale Test to seventy-four freshmen at Lees Junior College in Jackson, Kentucky in September, 1976. At the end of the semester grade point averages were gathered for the seventy-four freshmen. Measures of dispersion and central tendency were determined.

The data were further analyzed by using the Pearson-product moment correlation. The Table of Critical Values of the Pearson Product Moment Correlation Coefficient was used to determine if computed correlations were significant. Then the Test of Significance of the Difference between Two Correlation Coefficients for Correlated Samples was used to determine if there was a significant difference between the two reading tests' correlations with grade point averages. (See Appendix C.)

In 1977 additional data were gathered by administering the Reading Progress Scale Test to eighty freshmen at Lees Junior College in Jackson, Kentucky. At the end of the semester, grade point averages were gathered

for the eighty freshmen. The data were analyzed by using the Pearson-product moment correlation and the Table of Critical Values of the Pearson Product Moment Correlation Coefficient to determine if the computed correlation was significant.

Measures of Dispersion and Central Tendency

From an analysis of the data, the following information concerning the measures of dispersion and central tendency are shown in Tables 1 and 2.

TABLE 1

MEASURES OF DISPERSION AND CENTRAL TENDENCY, 1976

Variable	Mean	Median	Range	Standard Deviation
Nelson-Denny Percentile Scores	22.50	9.5	1-94	24.06
Reading Progress Scale Level Scores	3.51	4	2-4	.67
Grade Point Averages	2.29	2.4	0.0-4.0	.98

The mean percentile score on the Nelson-Denny Reading Test achieved by seventy-four students at the beginning of the fall term, 1976 was 22.50 with a standard deviation of 24.06. Thus, the standard deviation

was greater than the mean percentile score. The median score was 9.5. The mean and median both indicate that most students received scores in the lowest quartile on the test. The range of scores was 1-94 percentile.

The mean Reading Progress Scale Test Level score was 3.51 of a possible 4 with a standard deviation of .67. The median Level score was 4. The mean and median both indicate that most students received scores near the top of the four levels. The range of scores was Levels 2-4.

The mean grade point average achieved by these students during the first semester was 2.29 on a four point scale. The median grade point average of 2.4 indicated an approximately normal distribution of the grade point averages. The range of grade point averages was 0.0-4.0.

TABLE 2

MEASURES OF DISPERSION AND CENTRAL TENDENCY, 1977

Variable	Mean	Median	Range	Standard Deviation
Reading Progress Scale Level Scores	3.60	4	0-4	.65
Grade Point Averages	2.35	2.4	0.2-4.0	.95

The mean Level score on Reading Progress Scale Test for eighty freshmen in the fall of 1977 was 3.60 of a possible 4 with a standard deviation of .65. The median Level score was 4. The mean and median indicate that most students received scores near the top of the four levels. The range included scores from 0.0-4.0.

First semester grade point averages for the 1977 students yielded a mean of 2.35 with a standard deviation of .95. The median was 2.4. The mean and median grade point averages indicated an approximately normal distribution in 1977. The range of grade point averages was 0.2-4.0.

Correlational Relationships

The Pearson-product moment correlation was used to determine if relationships existed between Nelson-Denny Reading Test and grade point averages and between Reading Progress Scale Test and grade point averages. The relationship between Nelson-Denny Reading Test and grade point averages resulted in the following data which is illustrated in Table 3.

TABLE 3

CORRELATION BETWEEN NELSON-DENNY READING TEST PERCENTILE SCORES AND GRADE POINT AVERAGES IN 1976

Variable	$\bar{X}$	r	P
Nelson-Denny Percentile Score	22.50		
		.54	.0005
Grade Point Averages	2.29		

r value for P = .3799

The correlation of Nelson-Denny Reading Test percentile scores with grade point averages yielded an r of .54 well above the .3799 significance level of .0005.

The correlation of .54 between Nelson-Denny Reading Test and grade point averages was significant at the .0005 level of confidence. In view of this finding, hypothesis number one was rejected i. e. There will be no significant correlation between the Nelson-Denny Reading Test percentile scores and grade point averages earned at the end of the first semester, 1976.

The correlational analysis between Reading Progress Scale Test and grade point averages in 1976 are shown in Table 4.

TABLE 4

CORRELATION BETWEEN READING PROGRESS SCALE LEVEL SCORES AND GRADE POINT AVERAGES IN 1976

Variable	$\bar{X}$	r	P
Reading Progress Scale Level Scores	3.51		
		.37	.005
Grade Point Average	2.29		

r value for P = .3017

The correlation between Reading Progress Scale Test and grade point averages in 1976 yielded an r of .37 which was significant at the .005 level of confidence.

Because the correlation of .37 was significant at the .005 level of confidence, hypothesis number two was rejected i. e. There will be no significant relationship between the Reading Progress Scale Test and grade point averages at the end of the first semester, 1976.

The correlational analysis between Reading Progress Scale Test and grade point averages in 1977 are shown in Table 5.

TABLE 5

CORRELATION BETWEEN READING PROGRESS SCALE LEVEL SCORES AND GRADE POINT AVERAGES IN 1977

Variable	$\bar{X}$	r	P
Reading Progress Scale Level Scores	3.60		
		.20	.05
Grade Point Averages	2.35		

r value for P = .1829

The correlation of Reading Progress Scale Test level scores with first semester grade point averages in 1977 yielded an r of .20 which was significant at the .05 level of confidence.

Because the correlation of .20 was significant at the .05 level of confidence, hypothesis number three was rejected, i. e. There will be no significant relationship between the Reading Progress Scale Test and grade point averages at the end of the first semester, 1977.

Test of Significance

Once it was determined that there were significant correlations between Nelson-Denny Reading Test and grade point averages and between Reading Progress Scale

Test and grade point averages in 1976, the null hypothesis of no significant difference between the two tests correlations with grade point averages was tested. The Test of Significance of the Difference Between Two Correlation Coefficients for Correlated Samples was used. The data obtained from this test is presented in Table 6.

TABLE 6

SIGNIFICANCE OF THE DIFFERENCE BETWEEN CORRELATION OF NELSON-DENNY PERCENTILE WITH GPA AND CORRELATION OF READING PROGRESS SCALE LEVEL WITH GPA

Variables in Correlation	r	t	P
Nelson-Denny Percentile with Grade Point Average	.54		
		1.56	<.10 >.05
Reading Progress Scale level with Grade Point Average	.37		

.10 value for P, 70df = 1.29
.05 value for P, 70df = 1.67

The level of significance obtained in the Test of Significance was between the .05 and .10 level of confidence. The T value obtained indicates more than .05 probability that the difference is not significant between the Nelson-Denny Reading Test and the Reading Pro-

gress Scale Test's correlation with grade point averages. Therefore, the null hypothesis is accepted, i. e. There will be no significant difference between the Nelson-Denny Reading Test's correlation with grade point averages earned at the end of the first semester, 1976 and the Reading Progress Scale Test's correlation with grade point averages earned at the end of the first semester, 1976.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to determine which reading test, Nelson-Denny Reading Test or Reading Progress Scale Test most accurately predicted grade point averages earned by Lees Junior College freshmen at the end of the first semester, 1976. Additionally, the study was to determine the Reading Progress Scale Test's ability to predict grade point averages for freshmen at the end of the first semester, 1977.

The population of the study consisted of seventy-four freshmen in 1976 and eighty freshmen in 1977 at Lees Junior College in Jackson, Kentucky. Each year entering freshmen were tested in September.

The raw data from the study were subjected to the Pearson-product moment correlation for statistical analysis. The Table of Critical Values of Pearson Product Moment Correlation examined the significance of the correlation. The Test of Significance of the Difference Between Two Correlation Coefficients for Correlated Samples was used to determine if there was a significant difference between the Nelson-Denny Reading Test and the Reading Progress Scale Test's correlation with

grade point averages. The correlations were significant at or above the .05 level of confidence and all three null hypotheses were rejected. The Test of Significance indicated there was no significant difference between the two tests' correlation with grade point averages in 1976.

Conclusions

Within the confines of this research, the following conclusions were drawn:

1. There is a relationship between reading test scores and grade point averages earned. In both years, 1976 and 1977, and for both the Nelson-Denny Reading Test and the Reading Progress Scale Test, the higher a student scored on the test, the higher his grade point average was.

2. There is no significant difference between the ability of the Nelson-Denny Reading Test and the Reading Progress Scale Test to predict grade point averages. Both reading tests predicted grade point averages above the .05 level of confidence in 1976.

Recommendations

From the results of the research the following recommendations can be presented:

1. A longitudinal comparative correlation study would be appropriate to determine the two tests' ability to predict grade point averages over a long period of time.

2. A study would be appropriate which examined other characteristics of the two tests including time and ease of administration, scoring, and students' subjective reactions to the testing environment.

3. A study would be appropriate to examine the pedagogical techniques college professors at Lees Junior College employ to teach the students who enter college with reading abilities, as measured by the two tests, at the elementary reading level.

4. A study would be appropriate to determine the correlation between reading ability, as measured by the two reading tests, and withdrawal rates at Lees Junior College.

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APPENDIXES

APPENDIX A 1976

Student	Age	Sex	Nelson-Denny Percentile Score	Reading Progress Level Scores	Lees GPA
1	18	M	60	4	2.7
2	19	M	24	3	0.3
3	18	F	5	4	0.3
4	18	F	59	4	3.0
5	21	F	1	2	0.0
6	18	F	65	4	2.5
7	18	F	6	4	0.0
8	19	M	1	2	2.0
9	18	F	2	3	0.2
10	17	F	94	4	4.0
11	18	M	1	2	1.1
12	47	M	61	3	2.8
13	18	M	45	3	1.1
14	18	F	51	4	3.2
15	20	F	4	3	2.8

Student	Age	Sex	Nelson-Denny Percentile Score	Reading Progress Level Score	Lees GPA
16	18	M	24	4	1.1
17	18	M	70	4	2.7
18	18	F	7	4	1.4
19	18	M	90	4	3.5
20	22	F	12	4	3.7
21	25	M	80	4	3.4
22	18	F	39	4	3.3
23	23	M	53	4	3.1
24	19	F	14	4	2.3
25	19	F	5	4	2.0
26	19	M	4	3	0.8
27	18	F	19	4	2.5
28	18	F	9	4	2.4
29	18	F	9	4	3.2
30	21	M	19	4	1.4
31	19	M	5	2	2.4

Student	Age	Sex	Nelson-Denny Percentile Score	Reading Progress Level Score	Lees GPA
32	18	F	5	4	2.4
33	19	F	36	4	3.2
34	18	M	30	4	2.4
35	18	F	6	4	2.4
36	19	M	6	2	1.0
37	25	F	61	2	1.0
38	18	F	6	4	1.9
39	18	F	9	4	2.2
40	18	F	3	3	2.7
41	18	F	55	4	3.2
42	18	M	46	4	4.0
43	18	M	5	3	2.0
44	24	M	13	3	1.5
45	18	M	57	4	3.5
46	18	M	4	2	2.1
47	18	F	1	4	2.9

Student	Age	Sex	Nelson-Denny Percentile Score	Reading Progress Level Score	Lees GPA
48	18	M	4	3	0.5
49	18	M	9	3	2.0
50	18	M	10	3	2.4
51	20	M	1	3	2.0
52	20	M	12	4	2.1
53	18	F	25	4	2.8
54	19	F	9	3	2.2
55	25	M	25	4	3.1
56	19	M	45	4	2.1
57	18	F	9	4	2.9
58	18	F	33	4	3.1
59	19	M	46	3	3.3
60	18	M	2	3	1.5
61	23	M	2	2	2.4
62	18	M	4	3	1.8
63	18	F	23	3	3.3

Student	Age	Sex	Nelson-Denny Percentile Score	Reading Progress Level Score	Lees GPA
64	19	F	7	4	0.0
65	17	M	5	3	1.8
66	19	F	2	3	2.4
67	26	F	38	3	2.8
68	18	F	22	4	2.6
69	19	F	21	4	2.8
70	18	F	4	4	2.9
71	18	M	6	4	2.4
72	19	F	10	4	2.5
73	18	F	5	4	2.8
74	19	F	5	3	2.2

APPENDIX B 1977

Student	Age	Sex	Reading Progress Level	Reading Progress Score	Lees GPA
1	19	M		3	1.7
2	19	F		4	0.2
3	19	F		4	2.2
4	18	F		3	1.7
5	19	M		3	2.2
6	18	F		3	0.5
7	18	F		3	0.3
8	20	F		3	1.1
9	18	F		4	0.2
10	18	M		4	1.1
11	18	F		4	3.5
12	18	F		4	2.8
13	19	F		4	2.7
14	19	F		4	2.8
15	18	M		3	1.2

Student	Age	Sex	Reading Progress Level Score	Lees GPA
16	18	F	4	3.7
17	18	F	4	3.2
18	18	F	3	2.8
19	18	M	4	3.0
20	18	F	4	3.0
21	18	F	3	3.2
22	19	M	3	1.2
23	18	M	4	2.4
24	19	M	4	3.7
25	19	M	3	3.4
26	32	F	3	3.7
27	18	M	4	2.3
28	34	F	4	4.0
29	23	F	4	3.4
30	18	M	4	2.2
31	19	F	4	2.0
32	18	M	4	2.5

Student	Age	Sex	Reading Progress Level Score	Lees GPA
33	17	M	3	4.0
34	18	F	4	2.4
35	18	F	4	1.7
36	18	F	4	3.2
37	18	M	4	1.3
38	19	M	3	1.9
39	19	F	4	3.3
40	19	F	4	2.4
41	18	M	3	2.4
42	19	M	0	1.4
43	19	F	3	2.6
44	18	M	4	1.8
45	18	M	4	2.8
46	17	M	4	2.3
47	18	F	4	1.8
48	22	F	4	3.2

Student	Age	Sex	Reading Progress Level	Reading Progress Score	Lees GPA
49	19	M		4	2.0
50	25	M		3	3.6
51	18	F		4	1.7
52	22	M		3	3.0
53	20	F		4	1.8
54	27	F		4	3.3
55	18	M		4	2.4
56	18	F		3	1.5
57	19	M		4	3.8
58	23	F		4	1.8
59	18	F		3	2.0
60	18	M		3	1.2
61	18	M		4	2.0
62	20	F		3	2.7
63	18	M		4	1.5
64	18	F		2	1.7

Student	Age	Sex	Reading Progress Level	Reading Progress Score	Lees GPA
65	17	F		4	2.6
66	18	F		3	2.5
67	18	F		4	2.2
68	18	F		4	1.6
69	18	F		4	3.6
70	18	M		4	2.2
71	22	M		4	4.0
72	18	M		4	3.5
73	18	M		4	1.4
74	19	F		4	3.4
75	18	M		3	1.0
76	18	M		4	0.7
77	18	F		4	3.3
78	18	M		3	2.8
79	18	F		4	2.5
80	18	M		3	1.9

APPENDIX C

TEST OF SIGNIFICANCE COMPUTATION

12 = ND r GPA = .54

13 = RPS r GPA = .37

23 = ND r RPS = .38

$$t = \frac{(r_{12} - r_{13})\sqrt{(N-3)(1+r_{23})}}{\sqrt{2(1 - r_{12}^2 - r_{13}^2 - r_{23}^2 + 2r_{12}r_{13}r_{23})}}$$

$$= \frac{(.54 - .37)\sqrt{(74-3)(1+.38)}}{\sqrt{2(1 - .54^2 - .37^2 - .38^2 + 2 \cdot .54 \cdot .37 \cdot .38}}$$

$$= \frac{(.17)\sqrt{97.98}}{\sqrt{2(1 - .29 - .14 - .14 + .15)}}$$

$$= \frac{.17 \cdot 9.90}{\sqrt{1.16}}$$

$$= \frac{1.68}{1.08}$$

$$t = 1.56$$

df	.05
70	1.667